

# **Stem Survival in 614,455 Primary Total Hip Arthroplasties: Insights from a National Cohort Study**

Louis Dagneaux<sup>1</sup>, NOGUE Erika, Nicolas Malafaye, Sebastien Lustig, Nicolas Nagot

<sup>1</sup>University Hospital of Montpellier

## **INTRODUCTION:**

The use of uncemented stems in primary total hip arthroplasties (THAs) has become increasingly common worldwide. However, the optimal stem fixation method remains a topic of debate, and national cohorts provide valuable insights into risk factors for failure. This study aimed to investigate the stem survivorships of contemporary THAs using a national database focusing on stem fixation.

## **METHODS:**

This observational study included all patients aged 50 years or older who underwent primary THAs for osteoarthritis between 2013 and 2022. Data on demographics, discharge, implant selection, stem fixation, and reoperations were extracted over a 10-year period. Kaplan-Meier estimations and Cox's proportional hazards regression models were used to determine stem survivorships with revisions as endpoints. Adjusted hazard ratios (HR) were reported for risk analysis.

## **RESULTS:**

A cohort of 614,455 THAs was analyzed, with 81% utilizing uncemented stems. The mean age at surgery was 72 years, and 56% were female. The median follow-up period was 5 years. Revisions or reoperations occurred in 36,281 cases (5.9%), with 13,789 cases identified as mechanical stem revisions. Among femoral revisions, periprosthetic femoral fracture rates for uncemented and cemented stems were 37% and 26%, respectively ( $p < 0.01$ ). The 10-year survivorships free of mechanical stem revision for cemented and uncemented stems were 97.6% and 96.3% ( $p < 0.0001$ ), respectively. Uncemented stems had a higher risk of femoral revision compared to cemented stems ( $HR=1.66$ ,  $p < 0.001$ ), with this risk increasing among females ( $HR=1.18$ ,  $p < 0.001$ ), older patients ( $HR=1.06$  per +10 years of age,  $p < 0.0001$ ), and those with a higher Charlson comorbidity index ( $HR=1.05$  per +1 unit,  $p < 0.0001$ ).

## **DISCUSSION AND CONCLUSION:**

Primary THAs for osteoarthritis showed excellent performance at 10 years, but uncemented stems were associated with an increased risk of mechanical stem revision compared to cemented stems. Female patients, older individuals, and those with higher comorbidity indices were particularly at risk for femoral revision.